

Acronym: EPO-Demos

Title: Education Payload Operation - Demonstrations

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Developer(s): Teaching From Space Office, NASA Johnson Space Center

Sponsoring Agency: National Aeronautics and Space Administration

Increment(s) Assigned: 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Mission Assigned: N/A

Brief Research Summary (PAO): Education Payload Operation - Demonstrations (EPO-Demos) are recorded video education demonstrations performed on the International Space Station (ISS) by crewmembers using hardware already onboard the ISS. EPO-Demos are videotaped, edited, and used to enhance existing NASA education resources and programs for educators and students in grades K-12. EPO-Demos are designed to support the NASA mission to inspire the next generation of explorers.

Research Summary:

- Education Payload Operations - Demonstrations (EPO-Demos) utilizes tools and other common items in the microgravity environment of the ISS to create educational video and multimedia products that inspire the next generation of mathematicians, physicists, engineers, and other scientists.
- EPO-Demos are a continuation of education demonstrations that have been conducted by ISS crewmembers since Expedition 7. The products are used for demonstrations and to support curriculum materials that are distributed across the United States and internationally to educators to encourage students to pursue studies and careers in science, technology, engineering, and mathematics and inspire the next generation of space explorers.

Detailed Research Description: The objective of Education Payload Operations - Demonstrations (EPO-Demos) is to use toys, tools and other common items in the microgravity environment of the ISS to create educational video and multimedia products that inspire the next generation of engineers, mathematicians, physicists, scientists and space explorers. The EPO-Demos support curriculum materials that are distributed across the United States and internationally. Each ISS Expedition involves different on-orbit activities and themes, as well as different partners, such as museums, universities, and public school districts.

Some of the activities cover physical properties, such as Newton's Laws of Motion or Bernoulli's Principle for air pressure, and others are specific to life in space, such as explaining how the ISS solar panels work or demonstrating extravehicular activities.

Project Type: Payload

Images and Captions:



Teaching From Space Office team members in the Johnson Space Center TeleScience Center supporting an EPO-Demo conducted by astronaut Suni Williams. Image courtesy of Teaching From Space Office, NASA Johnson Space Center.



NASA Image: ISS012E19194 - Expedition 12 Commander, Bill McArthur and Flight Engineer Valery Tokarev conduct an EPO-Demo on space suits.

Operations Location: ISS Inflight

Brief Research Operations:

- EPO-Demos are recorded video education demonstrations using hardware already onboard the ISS.
- EPO-Demos are supported by a ground team from the Teaching From Space Office at the Johnson Space Center TeleScience Center in Houston, TX.
- EPO-Demos are downlinked and later edited to enhance existing NASA education products.

Operational Requirements: EPO-Demos does not require power, telemetry, or specialized hardware. However, each demonstration requires several hours from at least two crew members, one of whom will operate the video equipment and the other will demonstrate the activity.

Operational Protocols: After setting up the demonstration, at least one crew member will perform the demonstration while another films it. Each demonstration will have its own props (e.g., toys or tools). The demonstration is then dismantled and returned to stowage. After the videos are returned to Earth, they will be used to develop teaching guides, project plans, and educational packages focusing on the physical sciences and technology.

Category: Observing the Earth and Educational Activities

Subcategory: Educational Activities

Space Applications: These investigations and related activities will have strong ties to NASA's Vision for Space Exploration and will be designed to encourage students to pursue studies and careers in science, technology, engineering, and mathematics (STEM).

Earth Applications: These investigations and related activities will have strong ties to NASA's Vision for Space Exploration and will be designed to encourage students to pursue studies and careers in science, technology, engineering, and mathematics (STEM).

Manifest Status: Planned

Supporting Organization: Space Operations Mission Directorate (SOMD)

Previous Missions: EPO-Demos have been performed on multiple Space Shuttle flights.

Web Sites:

Johnson Space Center Education and Student Programs
<http://education.jsc.nasa.gov/>

NASA Education Program
<http://education.nasa.gov/home/index.html>

Central Operations of Resources for Educators (CORE)
<http://core.nasa.gov/>

Related Payload(s): EPO, EPO-Kit D, EPO-Educator